

REMARKS

Applicants thank Examiner James A. Thompson for having now expressly withdrawn the rejections based on Curry.

Though the point is likely now moot, in the Official Action it is said that "Curry is an issued patent, and is therefore presumed valid. . . ." In law, a "presumption" is an understanding that controls only until rebutted by some stated quantum of information, whereupon a burden of proof shifts to proponents of the presumed fact. Applicants have offered factual observations tending to show that Curry is inoperative.

Section 102 rejections:

With exceptions detailed below, all of the claims are now amended to recite all these three features:

- measurement of variations in printing intensity among individual printing elements;
- compensation for such variations, based upon matrix modification that is performed in a rendition stage; and
- feedback that enables the compensation to be different for different print densities within a print

— together with interactions (or "synergy") among these three features. Applicants believe that none of these features is taught or suggested in the cited art:

As to the first of these features: it is asserted or very strongly implied in the Official Action that Koike teaches measurement of errors (see e. g., page 4 of the Action,

section 6, tenth line: "measured mark-intensity errors").

The Applicants respectfully submit, however, that these assertions or implications are factually in error.

Koike is not seen to teach any printed-intensity measurement at all. Rather, all adjustments that he makes are in response to internal mechanical problems such as paper-advance errors, and twisting of printheads as installed. (This particular point is applicable to assertions in the Action as applied to the claims before the present Amendment, as well as the amended claims.)

Furthermore these internal mechanical anomalies are not even associated with intensity variations — or any variations — among the individual print elements as claimed. They are generated from the mechanical operations of the printhead or the advance mechanism across the board, i. e. for all printing elements as distinguished from variations among the printing elements considered individually.

As to the second of the three features, in the Official Action it is suggested or stated that Koike teaches compensating for the "measured" intensity errors. This too is believed to be factually in error, not only because he fails to measure any such errors, but more particularly because:

(a) he selects dot sizes for purposes of minimizing "streaking" (light or dark banding) by intermingling dots of different sizes and positions within anticipated regions of streaking; and

(b) to accomplish such adjustments he does not modify a matrix, but rather selects from a set of predetermined data aggregations (e. g. matrices).

Specifically, Koike maintains predefined dot sizes, identifies them by numerical labels, and selects the dots (together with, if desired, their associated higher-level data aggregations) by invoking the numerical labels.

This distinction is still further developed by current amendments (introduced above) that now focus the claims upon intensity-marking variations as among the printing elements, rather than merely upon mark-intensity errors *per se*.

In addition this second of the three features even more emphatically distinguishes Koike because his data arrive in his system prehalftoned — *i. e.*, all of his dot-diameter selections are made in the final print-preparation stage, not in a rendition stage. In this stage, selection of discrete dot values is a relatively coarse (and primitive) methodology that cannot produce precise tonal adjustments at all.

The fact that Koike's image data are prehalftoned has been pointed out in earlier papers. Thus Koike does not halftone; and it is not strictly true that he is in the field of "control and correction of halftone printing".

Such final-stage adjustments can be fairly characterized as a "printmode" or a form of "printmasking" (although such characterization is not at all critical to the reasoning presented here). His coarse technique could not yield precise adjustments even if they were based upon printed-intensity measurements; but as already pointed out, they are not so based.

The Applicants' compensation system, on the contrary, expressly operates in a "rendition" stage. For purposes of this application, the term "rendition" is not a general term but quite specific: it is to be understood as synonymous with "rendering" as used in this field — both these terms meaning, specifically, classical halftoning, or halftoning accomplished by digital dithering, or error diffusion, or others of the more-modern family of rendering techniques.

Since the "second feature" under discussion here relates to "matrix modification that is performed in a rendition stage", and "rendition" has been defined for present purposes,

the Applicants wish to make even more clear that a rendition stage, and a rendition matrix, may relate to the type of rendition known as "error diffusion". In such cases the matrix may be one dimensional. Accordingly it is to be understood that — for purposes of this document, and in this particular regard — the term "matrix" is not limited to multidimensional or even two-dimensional matrices but in fact encompasses one-dimensional matrices.

The gravamen of the Applicants' current recitation of rendition is not any particular technique used but rather that the compensation occurs in a rendition/rendering stage. Such a stage is well understood to be upstream of printmasking and other final-stage preparations for printing.

Now as to the third of the three features (feedback that enables the compensation to vary with print density) — this point has been added to the Applicants' claims by this present amendment. It encompasses but is not limited to negative feedback.

Such forms of compensation are able to provide far more precise adjustments — e. g., much more precise uniformity of printing intensity, as between the individual printing elements — than anything found or suggested in Koike. Applicants respectfully submit that it is not possible to achieve such continuous or proportional control within a printmasking or "printmode" methodology such as Koike's, as his and like methodologies are not generally amenable to continuous control (also please see discussion under Section 103 rejections, below).

Also in regard to the three features enumerated and discussed above, most of the present claims recite interactions among all of the three. Whereas it may be desired to deem some of the three features anticipated by virtue of analogies,

metaphors, remote equivalences and the like, the Applicants respectfully submit that these articulations of synergy among the three features may help dispel such loose argumentation as they cannot be matched in the art.

All of these points are firmly based upon the Applicants' specification as initially deposited. No new matter is added.

Exceptions:

Some current independent claims diverge from the recitation of all three above-discussed features. In particular:

- claims 9 and 35 specify halftoning but not "other" forms of rendition;
- claim 37, conversely, excludes halftoning — thus being limited to "other", nonhalftoning forms of rendition;
- claims 25, 38 and 40 directly address negative feedback, rather than the broader forms of control discussed above; and
- claim 36 addresses scaling of image data rather than the three features discussed above.

PLEASE NOTE: "Image data" do not include "dot size"; hence the comments in the Official Action as to claim 36 and dot size are inapposite to the Applicants' claim 36.

Section 103 rejections:

In view of current extensive amendments, with respect the Applicants believe that it would not be productive to reply in detail to each of the obviousness rejections set forth in the current Official Action. Nevertheless the Applicants do re-

spectfully submit that the rejections over Koike in combination with Obata appear to be improper in that these two references are not meaningfully combinable.

More specifically, Koike specifically teaches and discusses only posthalftoning adjustments while, in the Official Action, Obata is cited for such functions as "halftone dot generation". No part of either reference is cited to show how such a marriage can be arranged, in practical terms.

That is to say, nothing in the Action or the references appears to provide enablement for the many purported combinations of features or functions. Accordingly the Applicants respectfully ask that these proposed combinations and the associated rejections be withdrawn.

Like objections by the Applicants apply to the other rejections based upon such a combination, namely at least the rejections of claims 2 through 5, 7, 9 through 21, 24 and 39.

Specifically in regard to these objections, the Applicants believe that several of the points evidently found persuasive when raised in relation to Curry are applicable here too:

- The Examiner and the Applicants have agreed that the test for obviousness is not "bodily" incorporation of features from one reference into the other — but rather what the references would suggest to a person of ordinary skill.

Now upon this fundamental principle, recent Supreme Court caselaw overlays the overarching concept that obviousness combinations must satisfy "common sense". Even features from disparate arts may be combined if people ordinarily skilled in the field or fields know about them.

No one can object to common sense — but common sense cuts both ways. In particular, technological con-

cepts that fail to function together — even conceptually — cannot be crammed together merely because it is possible to construct combinations of words that are drawn from the two concepts.

Even intimate knowledge of two features cannot justify rejection based on their combination, when references describing the two features suggest nothing to people ordinarily skilled in use of the two principles. Thus for example Koike and Obata represent long-known methodologies and devices in printmodes and in rendition respectively — but the combinations proposed in the Official Actions have failed to appear in the art (in any art). That is because at least until very recently the two sets of methodologies and devices have suggested nothing to artisans of ordinary skill. The point here is that it is not common sense, but rather the opposite, to push together such incompatible subsystems.

- The Applicants respectfully submit that, as with Curry, the proposed combinations of Obata (rendition) and Koike (printmodes or masking) are in fact unfeasible, and this on conceptual grounds — without any effort to “bodily incorporate” features of either technology into the other. Furthermore, this will be true even for an artisan of very highly advanced (not mere ordinary) skill.
- In earlier stages of this prosecution, as observed in the telephone interview, multihundred-element printing microarrays were equated with a newspaper-type offset lithographic press. Next, the same multihundred-element arrays were equated with a hypothetical multielement-hyperacuity printer formed from Curry plus Koike.

A fundamental problem with the rejections based upon these analogies was that they represented combinations of

— not technologies — only words, which the Applicants respectfully submit defied common sense. That is why the rejections were readily overcome, and were overcome, though at the very great cost of engrafting dozens of additional words into Applicants' originally spare claims. Such circular effort by the PTO and the Applicants alike is wasteful, since the original claims would never have been interpreted, for enforcement purposes, in the ways proposed in the Official Actions. The Applicants respectfully submit that those ways did not, and do not, comport with common sense — particularly the common-sense emphasized in current caselaw.

Now it seems that a printmode system and method (of Koike) can be smooshed together with a rendition system and method (of Obata). In this prosecution there seem to be no natural boundaries to stand in the way of such combinations. The terminology "smooshed together" is not commonly seen in patent prosecution, but appears applicable to the borderless perspective of the printing industry which generates this kind of common-sense-less combination.

- Just as Curry did not establish a tabulation in response to measured mark intensity, at all, but rather in response to known skews and offsets in his pixel grid, Koike establishes no tabulation in response to measurement of . . . anything, at all. Koike surely does not respond to any kind of intensity-error measurement — and a fortiore not to measurement of undesired printing-element intensity variations.

Even allowing substitution of "dot diameter" for "intensity", a substitution that is freely undertaken in the Official Action, Koike is not responding to measurement of such error. In fact the Applicants are happy to

acquiesce in such substitution (and even embrace it, for enforcement purposes); but the reference still fails to satisfy the Applicants' claim language.

- Just as Curry made no optical or other measurement of print-outs (or of marks, or marking colorant or the like) from his printer, Koike too fails to make such measurements (although he does look, and try to make some primitive comparisons based on eyeballing the results). Rather, Koike's closest approach to "measurements" — just as Curry's — appear to be confined to checking mechanical conditions of his device.

Where Curry did use such mechanical checks to regularize his pixel grid and its registration, Koike tries to obviate streaking due to paper-advance error and twisted printhead installations — but neither of those inventors uses them to correct mark-intensity variations.

- As with regard to Curry, the Applicants hasten to note that "pixel-grid imperfections" (in this case due to advance error), such as Koike sets out to correct, can have associated intensity effects. Everything in printing is surely connected with everything else in printing — but this does not mean everything in printing is equivalent, or the same, or indistinguishable from, everything else in printing.

Thus Koike is not fashioning a tabulation, not even a wholly new tabulation, to influence measured mark-intensity effects; rather, he is interested in correcting the paper-advance-caused grid imperfections themselves. Again, Curry does not measure mark-intensity effects.

- Koike is interested in correcting only registration errors — specifically, failure of swath sequences to abut

properly — a form of pixel-grid defect, not mark-intensity error. While it is true, as with Curry, that associated error in image intensity can arise, that is not the same thing as error in mark intensity.

On the other hand, more generally with regard to Section 103: the Applicants do favor providing a feedback loop — and it does appear impossible to configure a printmode at all like Koike's but based upon or using a feedback mechanism. The Applicants' several embodiments, however, provide and claim much more flexible and far more precise adjustment control than Koike can provide, and these are not limited to systems using feedback loops.

Essentially all of the Applicant's taught and claimed embodiments enable much more precise reduction of the printing-intensity variations, among the individual printing elements, than possible through anything like Koike's configurations. Hence the Applicant's invention, besides being new and unobvious, is a very rich one that wholly outperforms Koike, regardless of what other inoperative combinations may be posited.

February telephone interview, and the current amendments:

The Applicants note again, with regard to the February 22 telephone interview courteously and generously granted by the Examiner, that in the interview the Examiner suggested claiming some of the "specific ways of doing things" taught in the specification. The Applicants' present amendments are believed to closely follow that suggestion. Accordingly the Applicants respectfully request allowance of the claims as thus amended.

Conclusion

In view of the foregoing amendments and remarks, Applicants respectfully request the Examiner's favorable reconsideration and allowance of all the claims now standing in this case.

It is respectfully requested that, should there appear any further obstacle to allowance of the claims herein, the Examiner telephone the undersigned attorney to try to resolve the obstacle.

Respectfully submitted,



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